

BACKGROUND OF THE INVENTION

Cross-Reference to Related Application

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3/6/04
5 [0001] The present application is a Divisional of U.S. Patent Application No. 10/126,397 filed April 19, 2002, ^{now US 6729393} which was a Continuation-In-Part of U.S. Patent Application No. 09/539,004, filed March 30, 2000, ^{abandoned}.

Field of the Invention

[0002] The present invention relates to petroleum production wells. More particularly, the invention relates to well completion and production methods and apparatus.

Description of the Prior Art

10 [0003] The process and structure by which a petroleum production well is prepared for production involves the steps of sealing the production zone from contamination and securing production flow tubing within the well borehole. These production zones are thousands of feet below the earth's surface. Consequently, 15 prior art procedures for accomplishing these steps are complex and often dangerous. Any procedural or equipment improvements that eliminate a downhole "trip", is usually a welcomed improvement.

[0004] Following the prior art, production tube setting and opening are separate "trip" events. After a well casing is secured by cementing, a production string is then 20 positioned where desired within the borehole and the necessary sealing packers set. In some cases, the packers are set by fluid pressure internally of the tubing bore. After the packers are set, a cementing circulation valve in the production tube assembly is opened by tubing bore pressure, for example, and annulus cement is